defined in a negative way, as those tissues which were neither epidermal nor fibro-vascular, no real positive character grouping them together. The author proposes rather a basis of function, which sounds well, provided function can always be clearly made out. We have then such groupings as "Protective System," "Mechanical System," "Conducting System," etc., all grouped under the two general heads of protection and nutrition. Such arrangement, for instance, puts bast and wood-cells among protecting tissues, and tracheary tissue, sieve vessels, soft bast, etc., among conducting tissues, under the nutritive group. This may do for a physiological grouping, but the anatomist will yet demand that the fibro-vascular bundle, for instance, be considered some how as a whole. Dr. Haberlandt thinks that wood-cells are purely mechanical and not at all conductive, and that tracheary tissue conducts, not air, but water. The fact that tracheary vessels have no connection with intercellular spaces or stomata is taken as evidence of a low pressure of air within them, thus, perhaps, inducing suction to some extent: The ordinary tracheary vessels are for the "through passage" of water, but tracheides for local distribution and so abound in leaves. The conductive tissue for proteids consists of the soft bast and sieve tubes. The book is a valuable one, but is itself an illustration of the fact that a classification of tissues upon the basis of function, however desirable, is not practicable in the present state of our knowledge.

**Dr. H. C. Beardslee.**—It is our painful duty to record the death (in December last) of a constant subscriber and contributor to the GAZETTE, Dr. H. C. Beardslee, of Painesville, Ohio. Some years ago he published a catalogue of the plants of Ohio, which he perfected before his death. Owing to a failure in the appropriation for the publi ation of the Geological Survey of Ohio this completed catalogue has never been printed. Dr. Beardslee's herbarium is now at Oberlin, consisting of about 4,000 species, and being especially rich in Carices, Grasses, and Salices.

## EDITORIAL NOTES.

MR. GEORGE BENTHAM bequeathed £1,000 to the Linnean Society.

DR. PARRY will remain abroad during the winter. He is spending much time at the Kew Herbarium.

CENT. XIV AND XV of Ellis' North American Fungi will be issued soon. Cent. XV is to be devoted to Uredineæ.

THE HERBARIUM of Dr. Göppert, recently deceased, has been bought for the botanical garden at Breslau for $1,000.

THE HERBARIUM of Cornell University has been estimated to be worth $1,800, as evidence in the McGraw-Fiske will suit.

THE CHAIR OF BOTANY in the Iowa Agricultural College has been tendered to Dr. B. D. Halsted, editor of the *American Agriculturist.*

THE HERBARIUM of the late Duval-Jouve has fallen to the Faculté des Sciences, at Montpellier, the place of his residence.

A FRENCH SOCIÉTÉ MYCOLOGIQUE will be established with the beginning of the new year, with Dr. A. Mougost, of Bruyères, Vosges, as secretary.

OF THE WORKERS who have been really studying the diatom shell, none seems entitled to greater credit than Dr. J. D. Cox, ex-Governor of Ohio.

THE TRYING PERIOD through which the study of the rusts (*Uredineæ*) is now passing is leaving its impress upon the nomenclature in such specific names as *vexans* (Farlow) and *perplexans* (Plowright).

THE POLLEN GRAINS and an anther of *Papaver Rhœas*, taken from funereal garlands found in Egypt, have been figured by C. A. White, in the Journal of the Linnean Society. The Garlands were made about 1000 B. C.

H. KLEBAHN believes that the chief function of lenticels is to facilitate the admission of gases to the interior portions of the cortex. Otherwise their entrance would be almost blocked by the impervious outer portions.

THE AMOUNT of insoluble mineral substances which acumulate in the leaves of plants has been found to be in some cases as much as 20–25 per cent. of their weight. In stems the per centage is much lower, and in roots still less.

MARSILEA MACROPUS Hook., bearing the common name of Nardoo, is recommended by R. Schomburgk, Director of the Botanic Garden of South Australia, as a valuable forage plant for that country. The sporocarps are used as food by the natives.

A PAPER ON THE MYXOMYCETES, their habitats, modes of collection, preservation, etc., prepared by Dr. George A. Rex, of Philadelphia, one of the most successful and enthusiastic students of these plants in this country, will be given in an early number of the GAZETTE.

THE FIRST ANNUAL REPORT of the Agricultural Experiment Station of the University of Wisconsin contains botanical matter of special interest. Corn smut is treated by Prof. W. A. Henry, and the onion mold, apple scab and leaf blight, and when the leaves appear, by Prof. W. Trelease.

MR. HENRY O. FORBES, studying the contrivances for fertilization in certain tropical orchids, comes to the conclusion that "a number of orchids are not fertilized by insects, but are so constructed as to enable them to fertilize themselves." The paper was read before the Linnean Society.

MR. E. S. GOFF, in an article on the "Relation of Color to Flavor in Fruits and Vegetables," in the *American Naturalist* for December, points out what appears to be a constant relation between the variation in color of the edible portion and its mildness and flavor—the lightest colored being the mildest.

MR. CHAS. PLOWRIGHT, at a recent meeting of the Linnean Society, speaking with reference to the reproduction of certain *Uredineæ*, affirmed that when reproduction takes place without æcidiospores, the resulting uredospores are far more abundant than when they come from æcidiospores sown upon the host-plant.

MR. ROMEYN B. HOUGH, of Lowville, N. Y., is preparing a work of very thin sections of wood and accompanying text. The first volume, to be issued in the spring, will embrace twenty-five species, each with radial, tangential and transverse sections. It promises to be superior to any work of the kind yet published.

WE SEEM to be nearing a solution of the vexed question of the structure of the diatom shell; therefore the discussion becomes of some interest to botanists. Let us be thankful that there are found students who are not content with "resolving" *Pleurosigma* or "fighting objectives" on some of the numerous "test (?) objects," "dry," "in balsam," with "central" or "oblique" light!

THE JOURNAL OF MYCOLOGY is announced as a new monthly journal, devoted to fungi, edited by Prof. Kellerman, of the Agricultural College of Kansas, J. B. Ellis, of Newfield, N. J., and B. M. Everhart, of Westchester, Pa. It is to be issued in place of *Schweinitzia*, mentioned some time since. It proposes to give an account of the current literature of the subject with descriptions of new North American species and monographs of genera.

JOURNALS THAT PUBLISH new species, or make any important announcements, should be compelled to print the date of their publication. A journal bearing the imprint of January, and distributed to its subscribers in March, is manufacturing priority in a wholesale way, and if any question of priority should arise, as is often bound to be the case in descriptions of new species, some very unjust decisions might be made. The GAZETTE is ready to follow its own suggestion.

MR. J. D. KING, of Cottage City, Mass., offers for sale carefully prepared and mounted sets of microscopic slides, showing the position of the resin ducts and development of the hypoderm cells of the 60 species of *Abietineæ* which occur within the limits of the United States, and which botanists will now be able to examine critically. The specimens are made from material furnished by Professor Sargent, of Harvard College. The price of entire sets of 60 slides is $25, and selections of a less number $6 a dozen.

WHAT IS BELIEVED to be the first described case of the occurrence of a three-sided conical apical cell in the leaf of any plant has been published by F. O. Bower, in the *Proceedings of the Royal Society*, of London. The apices of the young leaves of *Todea superba* and *Osmunda cinnamomea* are occupied by such cells, from the three sides of which segments are cut off in the usual way. The cell is so placed that one side faces the upper surface, while the other two stand obliquely to the under surface. The discovery is an important one, as it helps still further to bridge the gap between the Ferns and Cycadeæ.

THE FOLLOWING BOTANICAL papers have been presented to societies recently: The grasses mechanically injurious to live stock, by Prof. W. H. Brewer, before the National Academy, at Newport, in October: Illinois forests and forestry, by Prof. T. J. Burrill; Notes on marine algae, Recent investigations on the rise of sap in trees, and Some corn fungi, by Mr. A. B. Seymour, before the Illinois State Natural History Society, in July: Trees and shrubs of

Northern Japan, before the Montreal Horticultural Society; and Plants in their relation to disease, before the Massachusetts Horticultural Society, both by Prof. D. P. Penhallow.

MR DAVID F. DAY tells us, in the *Gardener's Monthly*, for January, that he has given much thought to the relation of the form of the flower to its position on the plant, and has arrived at the following conclusions: (1) "A flower, completely regular, is normally either erect or pendulous, and (2) a flower which is irregular, is normally always lateral," and furthermore adds that he has failed to find any published statement to this effect. By consulting Gray's Structural Botany, p. 219, he will see that Sprengel made the observation nearly a century ago, and also had a fair notion of its significance. Mr. Day also notes that where the flower is erect the stamens exceed the pistils in length, but where pendulous the pistils exceed the stamens, i. e., the anthers in either case are above the stigmas. This is, however, an empirical rule to which many exceptions are easily found, and is only valuable as in the preceding case, when considered in connection with the mode of fertilization.

## CURRENT LITERATURE.

*List of, and Notes upon, the Lichens collected by Dr. T. H. Bean in Alaska and the adjacent region in 1880.* By Dr. J. T. Rothrock. Proc. U. S. Nat. Mus. vii. 1, 1884, Washington, D. C.

This is quite a creditable collection of lichens, especially when we consider that Dr. Bean was busy about everything else. Dr. Rothrock says that the accuracy of specific names is due to Mr. Henry Willey, whose name is a very familiar one to students of this group. The list contains 110 species, one being a new *Biatora* from E. Siberia.

*Catalogue of Canadian Plants.* Part II. Gamopetalæ. By John Macoun. Montreal: Dawson Bros., 1884. 100 pp.

This, like its fellow, is an exceedingly handsome pamphlet. The catalogue is a very complete one, and it would be hard to say what it needed to make it more so. Range, stations, habitat, collectors, and important synonymy are well given, and one turns over these handsomely printed pages with the feeling that our Canadian friends are working together in a good cause, with a hearty good will, and a liberal backing in the Geological and Natural History Survey of Canada. The Gamopetalæ embrace 255 genera and 908 species. This remarkably resembles the display of the Polypetalæ, which numbered 243 genera and 907 species. Naturally we turn to our great family of Compositæ and find it includes 81 genera with 374 species, and in this family the great genus *Aster* numbers 54 species, with the acknowledgment, at the close, that Aster is in "great confusion." When will it not be? *Erigeron* numbers 25 species, which can not really be separated from *Aster*, thus making the group contain about 80 species, with several other outlying genera. The other genera then fall pretty much into the same order that American botanists are familiar with. We note that *Collomia* is still retained as a genus, although all distinctions between it and *Gilia* have broken down. Another part will complete the exogens.